REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Official Action dated May 4, 2005. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

Claims 3-5, 8-14 and 21-22 are under consideration in this application. Claims 1-2 and 6-7 are being cancelled without prejudice or disclaimer. Claims 3-5, 8-11 and 14 are being amended, as set forth above, in order to more particularly define and distinctly claim Applicants' invention.

The claims are being amended to correct formal errors and/or to better disclose or describe the features of the present invention as claimed. Applicants hereby submit that no new matter is being introduced into the application through the submission of this response.

Allowable Subject Matter

Claims 21-22 were allowed, and claims 4, 10 and 12-14 would be allowed if rewritten in independent form including all the limitations of the base claim and any intervening claims.

As claims 4, 10 are being rewritten in independent form including all the limitations of the base claim and any intervening claims, they are in condition for allowance. As to claims 12-14, since claims 12 and 14 are independent claims, they are already in condition for allowance.

Prior Art Rejections

Claims 1-3, 5-9 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,870,126 to Jyumonji et al. (hereinafter "Jyumonji"). Twelve (12) other prior art references were cited in Form PTO-892 as being pertinent to the disclosure. This rejection has been carefully considered, but is most respectfully traversed.

Claims 3& 9

The method of manufacturing an active matrix substrate of the invention, as now recited in claim 3, wherein a laser beam 1 is repeatedly exposed to a semiconductor film formed on a dielectric substrate of an active matrix substrate to produce a polycrystallized semiconductor film 3, comprises: intensity modulating said laser beam 1; directing and shaping said laser beam 1 to be periodic in at least one direction; moving randomly the intensity distribution of the laser beam 1 on said semiconductor film 3 in the periodic direction of said intensity modulation.

The method for manufacturing an active matrix substrate of the invention, as now recited in claim 9, including the process steps of exposing a laser beam 1 a plurality of times to a semiconductor film formed on a dielectric substrate 6 of the active matrix substrate to crystallize said semiconductor film 3, comprising: providing a long axis and a short axis of exposure shape on said semiconductor film 3 to said laser beam 1 and providing a rectangular form laser beam having a periodic intensity modulation in said long axis direction; moving said laser beam 1 in relation to said dielectric substrate 6 in said short axis direction of said laser beam 1 to said semiconductor film 3 for exposing said semiconductor film 3 a plurality of times to crystallize said semiconductor film 3; and moving randomly the intensity modulation of said laser beam 1 on the semiconductor film 3 formed on said dielectric substrate 6 from one laser beam 1 exposure position to another laser beam 1 exposure position in said long axis direction.

Both claims 3 & 9 recite that a coordinate y on said semiconductor film 3 in the periodic direction of said intensity modulation at the point where the laser beam intensity becomes a maximum at the time of said laser beam exposure, is given by $y = na + r$, where a (e.g., 22 in Fig. 4) designates a periodicity of intensity modulation of said laser beam 1, n designates an integer, r designates a non-negative value smaller than a and which is determined for each exposure, and in which the difference between the maximum and minimum values of said r is a half or more of periodicity (e.g., p. 22, line 16 to p. 23, line 14; Fig. 4).

Contrary to the Examiner's assertion (p. 4, 1st full paragraph of the outstanding Office Action) that Jyumonji teaches "repeatedly exposing an intensity-modulated laser beam 1 a plurality of times to the same semiconductor film 3 by $y = na + r$", Applicants respectfully contend that Jyumonji merely discloses that the crystal can be grown about 7 micron by a single shot/exposure of multi-beams (col. 19, lines 23-27, 56-58; "*The homogenizer 32a has*

a function of equalizing the laser beams emitted from the light source 1." Col. 8, lines 57-58; Fig. 4), rather than a plurality of intensity-modulated laser exposures to the same semiconductor film 3 by y = na + r.

In fact, Jyumonji teaches away from the invention by using one single exposure, rather than a plurality of intensity-modulated laser exposures to the same semiconductor film. It is well established that a rejection based on cited references having contradictory principles or principles that teach away from the invention is improper.

Claims 5 & 11

Instead of the feature of y = na + r recited in claims 3 & 9, claims 5 & 11 recite "forming, in the periodic direction of the intensity modulation of said laser beam 1, the polycrystalline semiconductor film 3 having a grain size approximately equivalent to a periodicity of said intensity modulation (e.g., Fig. 12; "modulation period" p. 37, lines 3-12)".

Column 22, lines 25-30 of Jyumonji was relied upon by the Examiner to cover the feature described on claims 5 and 11 (p. 4, 2nd full paragraph of the outstanding Office Action). However, Applicants realized it seems to be column 20, lines 25-30 instead. However, Jyumonji merely discloses an average diameter of 5 micron in the experiment are shown in Figs. 18A-18C in conjunction with a modulation period of light intensity of 10 micron as shown in Fig. 18A such that Jyumonji's grain size is a half (1/2) of the modulation period, rather than approximately equivalent to (~1) the modulation period as recited in claims 5 & 11.

Claim 8

Instead of the feature of y = na + r recited in claim 9, claim 8 recites "using a phase shift mask 4 having a periodicity of the periodicity of said intensity modulation times an integer more than two to maintain a constant distance between said semiconductor film 3 and said phase shift mask 4 to provide periodic intensity modulation of said laser beam 1".

Column 11, lines 5-25, 36-50 of Jyumonji was relied upon by the Examiner to cover the feature described on claim 8 (p. 6, 1st paragraph of the outstanding Office Action). However, the relevant portions of Jyumonji only discloses that the position of the movable stage 7 to be changed by moving it step by step at predetermined intervals within the X-Y

plane, and that the annealing manner which is repeated while gradually changing the irradiation region in order to crystallizing a large area, but does not disclose using the phase shift mask 31 maintaining a constant distance between the semiconductor film on the movable stage 7 and said phase shift mask 31.

In fact, Jyumonji teaches away from the invention by adjusting the position of the phase shifter 31 and the height of the movable stage 7 via sending operational signals to the beam profile modulator 3 and the movable stage 7 in a feedback manner (col. 11, lines 43-50), rather than maintaining a constant distance between the semiconductor film on the movable stage 7 and said phase shift mask 31. It is well established that a rejection based on cited references having contradictory principles or principles that teach away from the invention is improper. In particular, Jyumonji compares the measured beam profile to a preset target beam profile to determine the operation amounts of the beam profile modulator 31 and the movable stage 7, rather than maintaining a constant distance therebetween (col. 11, lines 43-46). In addition, Jyumonji controls the position of the phase shifter 31 and the height of the movable stage 7 via sending operational signals to the beam profile modulator 3 and the movable stage 7, in a feedback manner, until a measured beam profile reaches a the target beam profile (col. 11, lines 46-50)

Applicants contend that Jyumonji fails to teach or disclose each and every feature of the present invention as recited in independent claims 3, 5, 8-9 and 11. As such, the present invention as now claimed is distinguishable and thereby allowable over the rejections raised in the Office Action. The withdrawal of the outstanding prior art rejections is in order, and is respectfully solicited.

Conclusion

In view of all the above, Applicants respectfully submit that certain clear and distinct differences as discussed exist between the present invention as now claimed and the prior art references upon which the rejections in the Office Action rely. These differences are more than sufficient that the present invention as now claimed would not have been anticipated nor rendered obvious given the prior art. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application as amended is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to

contact the Applicant's undersigned representative at the address and phone number indicated below.

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